CLAIMS

What is claimed is:

1. A differential pressure sensor comprising:

a fluid channeling device having a fluid channel defined therethrough and a fluid flow detector located in said fluid channel;

a circuit coupled to said fluid flow detector for detecting a change in fluid flow through said fluid channel; and

memory having stored therein a characteristic of said fluid channeling device.

2. A differential pressure sensor as recited by claim 1, wherein said fluid flow detector comprises:

a first thermistor provided at a first location in said fluid channel; and

a second thermistor provided at a second location in said fluid channel.

3. A differential pressure sensor as recited by claim 2, wherein a fluid flows through said fluid channel in a fluid flow direction, and wherein said second location is downstream from said first location in the fluid flow direction.

4. A differential pressure sensor as recited by claim 1, wherein said fluid channeling device comprises:

an input hose;

an output hose; and

a fluid container having an input aperture to which said input hose is coupled and an output aperture to which said output hose is coupled, and wherein said characteristic of said fluid channeling device stored in said memory comprises calibration data for said input hose and said output hose.

5. A differential pressure sensor as recited by claim 4, wherein said characteristic of said fluid channeling device comprises a first constant K_1 and a second constant K_2.

6. A differential pressure sensor as recited by claim 2, wherein said circuit comprises:

a wheatstone bridge circuit having four resistors, one of which is said second thermistor; and

a voltage divider circuit having two resistors, one of which is said first thermistor.

7. A differential pressure sensor as recited by claim 6, wherein said second thermistor is operated in constant temperature mode.

8. A differential pressure sensor as recited by claim 6, wherein said circuit further comprises an operational amplifier electrically coupled to said wheatstone bridge circuit to maintain said wheatstone bridge circuit in a balanced condition.

9. A method of calibrating a differential pressure sensor comprising the steps of:

(a) providing a calibration system having an enclosure with a pressure chamber and a controller for controlling a pressure with the pressure chamber;

(b) coupling a pressure sensor to be calibrated to the calibration system and controller;

(c) setting a pressure within the pressure chamber;

(d) recording an output signal of the pressure sensor to be calibrated indicative of its response to the pressure set within the pressure chamber in step (c);

(e) calculating a constant for the pressure sensor to be calibrated based on the output signal recorded in step (d); and

(f) writing the constant in a memory of the pressure sensor to be calibrated.

10. A method as recited by claim 9, further comprising the step of repeating steps (c) through (e) for a predetermined number of iterations.

11. A system for controlling air flow in an enclosure having a chamber defined therein, said system comprising:

a supply air system coupled to the chamber for providing air flow into the chamber; and

a first differential pressure sensor coupled to said supply air system and comprising:

an air channeling device having a air channel defined therethrough and a air flow detector located in said air channel;

a circuit coupled to said air flow detector for detecting a change in air flow through said air channel; and

memory having stored therein a characteristic of said air channeling device;

said first differential pressure sensor controlling said supply air system to maintain a predetermined air flow in the enclosure.

12. A system as recited by claim 11, wherein said air flow detector comprises:

a first thermistor provided at a first location in said air channel; and

a second thermistor provided at a second location in said air channel.

13. A system as recited by claim 12, wherein air flows through said air channel in an air flow direction, and wherein said second location is downstream from said first location in the air flow direction.

14. A system as recited by claim 11, wherein said air channeling device comprises:

an input hose;

an output hose; and

a container having an input aperture to which said input hose is coupled and an output aperture to which said output hose is coupled, and wherein said characteristic of said air channeling device stored in said memory comprises calibration data for said input hose and said output hose.

15. A system as recited by claim 14, wherein said characteristic of said air channeling device comprises a first constant K_1 and a second constant K_2.

16. A system as recited by claim 12, wherein said circuit comprises:

a wheatstone bridge circuit having four resistors, one of which is said second thermistor; and

a voltage divider circuit having two resistors, one of which is said first thermistor.

17. A system as recited by claim 16, wherein said second thermistor is operated in constant temperature mode.

18. A system as recited by claim 16, wherein said circuit further comprises an operational amplifier electrically coupled to said wheatstone bridge circuit to maintain said wheatstone bridge circuit in a balanced condition.

19. A system as recited by claim 11, further comprising

an exhaust air system coupled to the chamber for providing air flow out of the chamber.

20. A system as recited by claim 19, further comprising:

a second differential pressure sensor coupled to said exhaust air system and comprising:

an air channeling device having an air channel defined therethrough and a air flow detector located in said air channel;

a circuit coupled to said air flow detector for detecting a change in air flow through said air channel; and

memory having stored therein a characteristic of said air channeling device;

said second differential pressure sensor controlling said exhaust air system to maintain a predetermined air flow in the enclosure.

21. A system as recited by claim 20, wherein said air flow detector comprises:

a first thermistor provided at a first location in said air channel; and

a second thermistor provided at a second location in said air channel.

22. A system as recited by claim 21, wherein air flows through said air channel in an air flow direction, and wherein said second location is downstream from said first location in the air flow direction.

23. A system as recited by claim 20, wherein said air channeling device comprises:

an input hose;

an output hose; and

a container having an input aperture to which said input hose is coupled and an output aperture to which said output hose is coupled, and wherein said characteristic of said air channeling device stored in said memory comprises calibration data for said input hose and said output hose.

24. A system as recited by claim 23, wherein said characteristic of said air channeling device comprises a first constant K_1 and a second constant K_2.

25. A system as recited by claim 21, wherein said circuit comprises:

a wheatstone bridge circuit having four resistors, one of which is said second thermistor; and

a voltage divider circuit having two resistors, one of which is said first thermistor.

26. A system as recited by claim 25, wherein said second thermistor is operated in constant temperature mode.

27. A system as recited by claim 25, wherein said circuit further comprises an operational amplifier electrically coupled to said wheatstone bridge circuit to maintain said wheatstone bridge circuit in a balanced condition.